

WHAT IS CLAIMED IS:

1. A process for the preparation of a patterned polyurethane backed tufted good comprising:

- 5 (1) applying a puddle of a reactive polyurethane mixture to the back side of a greige good or a precoated greige good, wherein the reactive polyurethane mixture comprises:
- (a) at least one polyisocyanate component,
  - (b) at least one isocyanate-reactive component,
  - (c) at least one non-Newtonian thickeners,
  - 10 and
  - (d) at least one filler;
- (2) passing the greige good coated with the reactive polyurethane mixture under a doctoring device, wherein the edge of the doctoring device is patterned or the doctoring device comprises a removable attachment that is patterned,
- 15 thereby forming a pattern in the polyurethane mixture as it passes under the edge of the doctoring device or the removable attachment;
- and
- 20 (3) curing the polyurethane backed greige good which exhibits the desired pattern in the polyurethane backing.

2. The process of Claim 1, wherein the doctoring device comprises a doctor blade, a doctor bar, or a doctor roller.

3. The process of Claim 1, wherein said non-Newtonian thickener is an inorganic thickener having a specific surface area about 10 m<sup>2</sup>/g or greater.

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4. The process of Claim 3, wherein said inorganic thickener is present in an amount of from about 0.25 to 20 parts per 100 parts of isocyanate-reactive ingredients in the reactive polyurethane mixture.

5. The process of Claim 3, wherein said inorganic non-Newtonian thickener is selected from the group consisting of precipitated calcium carbonate, clay minerals, fumed silica, and mixtures thereof.

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6. The process of Claim 3, wherein said inorganic non-Newtonian thickener comprises fumed silica and is present in an amount of at least:

$$LL = 3 - 0.01 \times FL$$

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wherein:

LL: represents lower limit for non-Newtonian thickener in parts per 100 parts of isocyanate-reactive components;

and

10

FL: represents filler level in parts per 100 parts of isocyanate-reactive components;

and wherein the amount of non-Newtonian thickener is no more than:

$$UL = 8 - 0.02 \times FL$$

15

wherein:

UL: represents upper limit for non-Newtonian thickener in parts per 100 parts of isocyanate-reactive components;

20

and

FL: represents filler level in parts per 100 parts of isocyanate-reactive components.

7. The process of Claim 3, wherein said inorganic non-Newtonian thickener comprises precipitated calcium carbonate and is present in an amount of at least:

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$$LL = 18 - 0.06 \times FL$$

wherein:

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LL: represents the lower limit for non-Newtonian thickener in parts per 100 parts of isocyanate-reactive components;

and

FL: represents filler level in parts per 100  
parts of isocyanate-reactive  
components;

5 and wherein the amount of non-Newtonian thickener is no more than:

$$UL = 48 - 0.012 \times FL$$

wherein:

UL: represents the upper limit for non-  
Newtonian thickener in parts per 100  
10 parts of isocyanate-reactive  
components;

and

FL: represents filler level in parts per 100  
parts of isocyanate-reactive  
15 components.

8. The process of Claim 3, wherein said inorganic non-  
Newtonian thickener has a mean particle size less than 1  $\mu\text{m}$ .

9. The process of Claim 3, wherein said inorganic non-  
Newtonian thickener has a mean particle size less than 0.3  $\mu\text{m}$ .

20 10. The process of Claim 3, wherein said thickener forms  
aggregates and/or agglomerates.

11. The process of Claim 1, wherein an organic non-Newtonian  
thickener is employed.

25 12. The process of Claim 11, wherein said organic non-  
Newtonian thickener is an associative thickener.

30 13. The process of Claim 1, wherein the viscosity of said  
reactive polyurethane formulation at a first, high rate of shear is within  
20% of the viscosity of a reactive polyurethane of the same formulation  
but devoid of non-Newtonian thickener, and is at least three times the  
viscosity of the non-Newtonian thickener-devoid composition at a second,  
lower rate of shear.

14. The process of Claim 1, additionally comprising laminating a woven secondary backing to the polyurethane coating of the desired pattern after (2) passing under the doctoring device.

5 15. The process of Claim 1, wherein the precoated greige good is selected from the group consisting of a cured latex precoat, a cured urethane precoat, a partially cured urethane precoat and an uncured urethane precoat.

16. A process for the preparation of a polyurethane backed tufted good comprising:

- 10 (1) applying a puddle of a reactive polyurethane mixture to the back side of a greige good or a previously coated greige good, wherein the reactive polyurethane mixture comprises:
- (a) at least one polyisocyanate component,
  - (b) at least one isocyanate-reactive component,
  - 15 (c) at least one non-Newtonian thickener~~s~~,  
and
  - (d) at least one filler;
- (2) gauging the greige good coated with the reactive polyurethane mixture with a doctoring device;
- 20 (3) laminating a woven secondary backing to the reactive polyurethane mixture;
- (4) applying pressure against the face of the greige good such that the urethane is pushed through the windows of the woven secondary backing, thereby forming beads of
- 25 polyurethane on the exposed surface of the woven secondary backing;
- and
- (5) curing the polyurethane backed greige good.

17. The process of Claim 16, wherein the doctoring device  
30 comprises a doctor blade, a doctor bar, or a doctor roller.

18. The process of Claim 16, wherein said non-Newtonian thickener is an inorganic thickener having a specific surface area about 10 m<sup>2</sup>/g or greater.

19. The process of Claim 18, wherein said inorganic thickener is present in an amount of from about 0.25 to 20 parts per 100 parts of isocyanate-reactive ingredients in the reactive polyurethane mixture.

20. The process of Claim 18, wherein said inorganic non-Newtonian thickener is selected from the group consisting of precipitated calcium carbonate, clay minerals, fumed silica, and mixtures thereof.

21. The process of Claim 18, wherein said inorganic non-Newtonian thickener comprises fumed silica and is present in an amount of at least:

$$LL = 3 - 0.01 \times FL$$

wherein:

LL: represents lower limit for non-Newtonian thickener in parts per 100 parts of isocyanate-reactive components;

and

FL: represents filler level in parts per 100 parts of isocyanate-reactive components;

and wherein the amount of non-Newtonian thickener is no more than:

$$UL = 8 - 0.02 \times FL$$

wherein:

UL: represents upper limit for non-Newtonian thickener in parts per 100 parts of isocyanate-reactive components;

and

FL: represents filler level in parts per 100 parts of isocyanate-reactive components.

22. The process of Claim 18, wherein said inorganic non-Newtonian thickener comprises precipitated calcium carbonate being present in an amount, per 100 parts of isocyanate-reactive components, of at least:

5 
$$LL = 18 - 0.06 \times FL$$

wherein:

LL: represents lower limit for non-Newtonian thickener in parts per 100 parts of isocyanate-reactive components;

10 and

FL: represents filler level in parts per 100 parts of isocyanate-reactive components;

and wherein the amount of non-Newtonian thickener is no more than:

15 
$$UL = 48 - 0.12 \times FL$$

wherein:

UL: represents upper limit for non-Newtonian thickener in parts per 100 parts of isocyanate-reactive components;

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and

FL: represents filler level in parts per 100 parts of isocyanate-reactive components.

25 23. The process of Claim 18, wherein said inorganic non-Newtonian thickener has a mean particle size less than 1  $\mu\text{m}$ .

24. The process of Claim 18, wherein said inorganic non-Newtonian thickener has a mean particle size less than 0.3  $\mu\text{m}$ .

30 25. The process of Claim 18, wherein said thickener forms aggregates and/or agglomerates.

26. The process of Claim 16, wherein an organic non-Newtonian thickener is employed.

27. The process of Claim 26 wherein said organic non-Newtonian thickener is an associative thickener.

28. The process of Claim 16, wherein the viscosity of said reactive polyurethane formulation at a first, high rate of shear is within  
5 20% of the viscosity of a reactive polyurethane of the same formulation but devoid of non-Newtonian thickener, and is at least three times the viscosity of the non-Newtonian thickener-devoid composition at a second, lower rate of shear.

29. The process of Claim 16, wherein the precoated greige good  
10 is selected from the group consisting of a cured latex precoat, a cured urethane precoat, a partially cured urethane precoat and an uncured urethane precoat.

~~30.~~ A polyurethane backed tufted good which exhibits a pattern on the back surface, and comprises:

15 (A) a greige good comprising one or more fibers tufted into a primary backing, said greige good having a face surface and a back surface wherein the back surface may be uncoated, or coated with a latex or urethane precoat;

and

20 (B) a polyurethane backing having a face surface and a back surface, wherein the face surface of is adhered to the back surface of said greige good or the precoat when present, and said polyurethane backing is a reactive polyurethane mixture comprising:

- 25 (1) at least one polyisocyanate component,  
(2) at least one isocyanate-reactive component,  
(3) at least one non-Newtonian thickener,  
and  
(4) at least one filler;

30 wherein the pattern in the polyurethane backing is formed by passing the polyurethane backed greige good under a doctoring device, wherein the edge of the doctoring device is patterned or the

doctoring device comprises a removable attachment that is patterned.

31. A polyurethane backed tufted good which exhibits a pattern on the back surface, and comprises

- 5 (A) a greige good comprising one or more fibers tufted into a primary backing, said greige good having a face surface and a back surface, wherein the back surface may be uncoated, coated with a latex or urethane precoat;
- 10 (B) a polyurethane backing having a face surface and a back surface, wherein the face surface is adhered to the back surface of said greige good or the precoat when present, and said polyurethane backing is a reactive polyurethane mixture comprising:
- 15 (1) at least one polyisocyanate component,  
(2) at least one isocyanate-reactive component,  
(3) at least one non-Newtonian thickener,  
and  
(4) at least one filler;
- and
- 20 (C) a woven secondary backing which is laminated to the back surface of said polyurethane backing;

wherein the pattern is formed by the application of pressure or force to the face of the tufted good in a manner that pushes some of the polyurethane coating through the windows of the woven secondary backing.

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